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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,178	04/10/2001	Derek Spock	SYCMR-036XX	8822

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BOSTON, MA 02109

EXAMINER

TRAN, DZUNG D

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/832,178

Applicant(s)

SPOCK ET AL.

Examiner

Dzung D Tran

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 7-11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. US patent no. 6,512,613 in view of Kim et al. US patent application publication no. 2001/0015836.

Regarding claims 1 and 13, in figures 2, 4, 6, Tanaka discloses an optical add/drop multiplexer (31) comprising:

an optical add/drop module configured to receive a multi-wavelength optical input signal ($\lambda_1 - \lambda_{32}$) from an input path (41), provide a multi-wavelength optical output signal ($\lambda_1 - \lambda_{32}$) to an output path (42), and provide dropped traffic comprising at least one dropped wavelength to a first drop path (203, 353a), the dropped traffic being removed from the multi-wavelength optical input signal; and an optical signal de-multiplexer coupled between the first drop path (203, 353a) and a second drop path (353b), the optical signal de-multiplexer being configured to receive the dropped traffic from the first drop path, separate at least one selected dropped wavelength from the dropped traffic, and provide the selected dropped wavelength to the second drop path for subsequent processing. Tanaka differs from claims 1 and 13 of the present

invention in that Tanaka does not specific discloses the de-interleaver. Kim discloses the de-interleaver (200). Since the de-interleaver is well known in the art for selectively de-multiplex the multiplex optical signals into a predetermined group of channels in the DWDM system, it would have been obvious to an artisan at the time of the invention was made to replace the de-interleaver taught by Kim with the de-multiplexer in the system of Tanaka. One of ordinary skill in the art would have been motivated to do this in order to reduce the channel crossing interference signal or crosstalk due to narrow spacing between the channels in the high speed, large capacity optical communication system.

Regarding claim 2, Kim discloses the optical signal de-interleaver has an architecture comprising a plurality of hierarchical levels, at least one optical signal de-interleaver module being disposed in each of the hierarchical levels (figure 4, elements 200, 210, 220).

Regarding claim 3, Kim discloses the optical signal de-interleaver at least one optical signal de-interleaver module (200, 210, 220) disposed in each of the hierarchical levels includes a single input port (202, 203, 205), and a plurality of output ports (203, 205).

Regarding claims 4 and 14, since the de-interleaver is well known in the art for selectively de-multiplex the multiplex optical signals into a predetermined group of channels (for example, a de-interleave with two output ports, one output for a group of even channels and the other for a group of odd channels). Therefore, it is inherently that the de-interleaver of Kim would had two output ports, one output for a group of

even channels and the other for a group of odd channels. Furthermore, see figure 6, elements 300, 320, 322).

Regarding claim 5, single mode fiber is well known in the art. It would have been obvious to an artisan that whether to impose a single mode fiber or a multiple mode fiber is merely an engineer design choice.

Regarding claims 7 and 15, in figures 2, 4, 6, Tanaka discloses an optical add/drop multiplexer (31) comprising:

an optical add/drop module configured to receive a multi-wavelength optical input signal ($\lambda_1 - \lambda_{32}$) from an input path (41), provide a multi-wavelength optical output signal ($\lambda_1 - \lambda_{32}$) to an output path (42), and receive add traffic including at least one selected added wavelength from a first add path (314b), the add traffic being inserted into the multi-wavelength optical input signal; and an optical signal multiplexer coupled between the first add path (314b) and a add path (314a, 104) and configured to receive the at least one selected add wavelength ($\lambda_1 - \lambda_8$) from the respective second add path, in the event the at least one selected add wavelength comprises a plurality of selected add wavelengths, combine the plurality of selected add wavelengths to generate the add traffic, and provide the add traffic to the optical add/drop module by way of the first add path for subsequent processing. Tanaka differs from claims 7 and 15 of the present invention in that Tanaka does not specific discloses the interleaver. Kim discloses the interleaver (100). Since the interleaver is well known in the art for selectively multiplex the predetermined group of channels into a multiple optical signal, it would have been obvious to an artisan at the time of the invention was made to

replace the interleaver taught by Kim with the multiplexer in the system of Tanaka. One of ordinary skill in the art would have been motivated to do this in order to reduce the channel crossing interference signal or crosstalk due to narrow spacing between the channels in the high speed, large capacity optical communication system.

Regarding claim 8, Kim discloses the optical signal interleaver has an architecture comprising a plurality of hierarchical levels, at least one optical signal interleaver module (100, 110, 120) being disposed in each of the hierarchical levels.

Regarding claim 9, Kim further discloses at least one optical signal interleaver module (100, 110, 120) disposed in each of the hierarchical levels includes a plurality of input ports (103, 105) configured to receive respective groups of add wavelengths, and a single output port (102) configured to provide an optical signal comprising the received add wavelengths.

Regarding claims 10 and 16, Kim further discloses at least one optical signal interleaver module (figure 5, element 300) disposed in each of the hierarchical levels includes two input ports configured to receive respective groups of add wavelengths including a group of even wavelengths (322, 326) and a group of odd wavelengths (320, 324), and a single output port (310) configured to provide an optical signal comprising the even and odd wavelengths.

Regarding claim 11, single mode fiber is well known in the art. It would have been obvious to an artisan that whether to impose a single mode fiber or a multiple mode fiber is merely an engineer design choice.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. US patent no. 6,512,613 in view of Kim et al. US patent application publication no. 2001/0015836 and further in view of Liu et al. US patent no. 6,208,443.

Regarding claim 6, as per claims above, Tanaka and Kim disclose all the limitation except for the tunable optical filter. Liu discloses the tunable optical filter (abstract, 402, 603, col. 4, lines 57-61, col. 5, line 61). Since tunable optical filter is well known in the art for selectively de-multiplex a multiple optical signal, it would have been obvious to an artisan at the time of the invention was made to include the tunable optical filter taught by Liu in the system of Tanaka and Kim. One of ordinary skill in the art would have been motivated to do this in order to provide the groups of selective channels to desired drop sites.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. US patent no. 6,512,613 in view of Kim et al. US patent application publication no. 2001/0015836 and further in view of Bergano US patent no. 6,459,515.

Regarding claim 12, as per claims above, Tanaka and Kim disclose all the limitation except for a tunable laser. Bergano discloses a tunable laser (301₁, 301₂, ... 301_N, col. 3, lines 47-54). Since tunable laser is well known in the art for generate a plurality of optical data signals, each having a different wavelength. Therefore, it would have been obvious to an artisan at the time of the invention was made to include the tunable optical laser taught by Bergano in the system of Tanaka and Kim. One of ordinary skill in the art would have been motivated to do this in order to provide a plurality optical signal in sequential order.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Liu et al. U.S. patent no. 6,181,849. Interleaved wavelengths multi/demultiplexer with multiple input ports and multiple output ports for wavelength add/drop WDM system


b. Luo et al. U.S. patent no. 6,256,433. Expandable interleaving optical add/drop filter module

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung Tran whose telephone number is (703) 305-0932.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Jason Chan, can be reached on (703) 305-4729.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.


JASON CHAN
SUPERVISORY PATENT EXAMINER
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